CLAIMS

What is claimed is:

1. A computer-implemented method for instrumentation of an executable computer program that includes a first bundle of instructions followed by a second bundle, the first bundle having a predicated branch-call instruction followed by a call-shadow instruction, wherein the branch-call instruction conditionally transfers control to a target address in response to a state of an associated predicate and returns control to the second bundle, comprising:

changing the predicated branch-call instruction to a predicated branch instruction that targets a fifth bundle, wherein the predicate of the predicated branch instruction is the predicate of the predicated branch-call instruction;

creating a third bundle and inserting the third bundle after the second bundle, the third bundle including the call-shadow instruction;

creating a fourth bundle and inserting the fourth bundle after the third bundle, the fourth bundle including a branch instruction that targets the second bundle;

creating the fifth bundle and inserting the fifth bundle after the fourth bundle, the fifth bundle including a branch-call instruction having a target address equal to the target address of the predicated branch-call instruction; and

inserting instrumentation instructions in selected ones of the bundles.

2. The method of claim 1, further comprising:

identifying each instance of a predicated branch-call instruction followed by a call-shadow instruction;

creating respective sets of the third, fourth, and fifth bundles; and

changing each predicated branch-call instruction to a predicated branch instruction that targets the respective fifth bundle, wherein a predicate of the predicated branch instruction is the predicate of the predicated branch-call instruction.

3. The method of claim 2, further comprising:

allocating relocation address space; and

storing the respective sets of the third, fourth, and fifth bundles in the relocation address space.

4. The method of claim 3, further comprising:

identifying in selected functions of the executable program each instance of a predicated branch-call instruction followed by a call-shadow instruction; and

creating instrumented versions of the selected function in the relocation address space.

5. The method of claim 4, wherein the executable program code occupies a first address space, the method further comprising replacing a first instruction of each of the selected functions in the first address space with a branch instruction to a corresponding instrumented version of the function in the relocation address space.

6. The method of claim 1, further comprising:

identifying in selected functions of the executable program each instance of a predicated branch-call instruction followed by a call-shadow instruction; and

creating instrumented versions of the selected function in the relocation address space.

7. The method of claim 6, wherein the executable program code occupies a first address space, the method further comprising replacing a first instruction of each of the selected functions in the first address space with a branch instruction to a corresponding instrumented version of the function in the relocation address space.

8. An apparatus for instrumentation of an executable computer program that includes a first bundle of instructions followed by a second bundle, the first bundle having a predicated branch-call instruction followed by a call-shadow instruction, wherein the branch-call instruction conditionally transfers control to a target address in response to a state of an associated predicate and returns control to the second bundle, comprising:

means for changing the predicated branch-call instruction to a predicated branch instruction that targets a fifth bundle, wherein the predicate of the predicated branch instruction is the predicate of the predicated branch-call instruction;

means for creating a third bundle and inserting the third bundle after the second bundle, the third bundle including the call-shadow instruction;

means for creating a fourth bundle and inserting the fourth bundle after the third bundle, the fourth bundle including a branch instruction that targets the second bundle;

means for creating the fifth bundle and inserting the fifth bundle after the fourth bundle, the fifth bundle including a branch-call instruction having a target address equal to the target address of the predicated branch-call instruction; and

means for inserting instrumentation instructions in selected ones of the bundles.

9. A computer-implemented method for instrumentation of an executable computer program that includes a first bundle of instructions having a predicated branch-call instruction followed by a call-shadow instruction, wherein the branch-call instruction conditionally transfers control to a target address in response to a state of an associated predicate and returns control to a second bundle that follows the first bundle, comprising:

inserting in the executable program a trampoline code segment that includes a third bundle followed by a fourth bundle, the third bundle including an unpredicated branch instruction having the target address of the predicated branch instruction, and the second bundle having an unpredicated branch having a target address that references the second bundle;

changing the target address of the call-branch instruction to reference the first bundle; and

inserting instrumentation code in the program whereby the call-branch instruction and the second instruction are stored in different bundles.

10. The method of claim 9, further comprising:

allocating relocation address space; and

storing the trampoline code segment in the relocation address space.

11. The method of claim 10, further comprising:

identifying each instance of a predicated branch-call instruction followed by a call-shadow instruction; and

creating a respective trampoline code segment for each instance of a predicated branch-call instruction followed by a call-shadow instruction.

12. An apparatus for instrumentation of an executable computer program that includes a first bundle of instructions having a predicated branch-call instruction followed by a call-shadow instruction, wherein the branch-call instruction conditionally transfers control to a target address in response to a state of an associated predicate and returns control to a second bundle that follows the first bundle, comprising:

means for inserting in the executable program a trampoline code segment that includes a third bundle followed by a fourth bundle, the third bundle including an unpredicated branch instruction having the target address of the predicated branch instruction, and the second bundle having an unpredicated branch having a target address that references the second bundle;

means for changing the target address of the call-branch instruction to reference the first bundle; and

means for inserting instrumentation code in the program whereby the call-branch instruction and the second instruction are stored in different bundles.